

PATENT SPECIFICATION

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DRAWINGS ATTACHED

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(54) IMPROVEMENTS IN AND RELATING TO CONTAINERS

(71) We, POLYTHENE DRUMS LIMITED, a British Company of Colne Road, Twickenham, Middlesex, do hereby declare the invention for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to containers adapted to reduce the quantity of material contained therein which cannot be removed therefrom when the container is maintained in its normal dispensing position (i.e. with its outlet orifice contained in a vertical plane). In this specification, the references to the contents of a container are to be understood to refer to those contents which are sufficiently free flowing as to be capable of discharge from the container through outlet means when the container is maintained in a dispensing position.

A large number of containers are presently being produced which are manufactured from plastics material such as polyethylene. These containers are usually of a substantially cuboidal shape having a pair of side walls, a rear end wall, a forward end wall, a top wall and a base wall, each of said walls being disposed substantially perpendicular to each adjoining wall and the forward end wall having a dispensing opening disposed towards said base wall. Such containers are generally provided with a neck extending forwardly of the forward wall about the dispensing opening and this neck is usually externally threaded to receive a co-operating internally threaded cap unit incorporating a tap, the arrangement being such that, with the cap unit threaded onto the neck and with the container supported in its normal discharge position, i.e. with the base wall on a substantially horizontal surface, the contents of the container will flow along said neck in a horizontal direction and then through said tap when open to emerge therefrom in a vertically downwards direction. A disadvantage of these containers is that, due to the nature of the methods employed for manufacturing them from plastics material, the neck cannot be positioned at the very

bottom of the forward end wall and must therefore be located a short distance, of the order of $\frac{1}{4}$ ", above the junctions of the forward end wall and the base wall. This means that a proportion of the contents of the container will be retained in the container when the content level falls below the level of the dispensing opening when the container is in its normal discharge position. Such a proportion can only be removed from the container by raising the rear wall relative to the forward wall to incline the base wall of the container to the horizontal. As these containers are usually adapted to be stored in protective cases, which cases may be stacked one on top of another, it is not always convenient, or even possible, to incline the container in the aforementioned manner when said container is located within such a protective case.

According to the present invention, there is provided a container having an outlet provided in a forward end wall thereof and a base wall adjacent said outlet, which base wall, when the container is disposed in its normal dispensing attitude (i.e. with the outlet orifice in the forward end wall contained in a vertical plane, is inclined from its rearward extremity downwardly towards its forward extremity adjacent the forward end wall. Preferably the forward end wall is planar and is contained in a vertical plane when the container is in its normal dispensing position.

A preferred type of container according to the invention is of approximately cuboidal shape being formed of a pair of side walls, the forward end wall through which the outlet extends, a rear end wall, an upper wall and the base wall, said forward, rear, upper and base walls extending substantially perpendicularly between said side walls and said base wall sloping inwardly with respect to the container from the junction with the forward end wall rearwardly to the junction with the rearward end wall.

The outlet of the container according to the present invention preferably incorporates

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a neck, which neck extends forwardly of the forward end wall and forms an extension of an opening in said wall to provide both an inlet and an outlet for the contents of the container. The outlet may incorporate or be adapted to co-operate with a control for controlling the flow of material from the container via said neck. Thus the neck may be externally threaded to receive a co-operating internally threaded cap unit incorporating a tap for controlling the rate at which the contents of the container may be dispensed. In view of the fact that the containers according to the present invention are adapted to operate in a position where the contents of the container will pass through the neck portion in a substantially horizontal direction, it is preferred that the tap arrangement should be of the type adapted to convert such horizontal flow into vertical flow and thus permit the contents of the container to leave the tap in a vertical stream.

The following is a description by way of example only and with reference to the accompanying drawings of a container according to the invention and of a protective case adapted to accommodate said container. In the accompanying drawings:—

Figure 1 is a side view of a container according to the present invention.

Figure 2 illustrates a blank from which a protective case for the container of Figure 1 may be constructed.

Figure 3 is a side and front perspective view of a case assembled from the blank shown in Figure 2 and accommodating the container shown in Figure 1, the case being supported on its base in a dispensing position with a perforated portion removed to expose a dispensing tap engaged with the neck of the container.

Figure 4 is a front and side perspective view of the case shown in Figure 3 showing the case in a part assembled configuration.

Figure 5 is a front elevation of a member whereby the neck of the container is supported in the case shown in Figures 3 and 4.

Figure 6 is a side view of the wedge arrangement disposed in the case to provide an inclined surface for the base thereof.

A container according to the present invention and generally indicates at 1 is of substantially cuboidal shape which when considered in a dispensing attitude comprises a pair of spaced vertical side walls 40; a vertical rear wall 41; a vertical forward wall 42; a horizontal top wall 43 and a base wall 44, which latter extends perpendicularly to the side walls but it inclined upwardly with respect to the horizontal from the forward to the rearward wall. The forward wall 42 of the container has a circular opening extending therethrough centrally towards the lower edge thereof, the edge defining the periphery of the opening having a forwardly extending

cylindrical neck 45 co-axial with said opening. This neck is externally threaded to receive an internally threaded cap unit incorporating a dispensing cap. The cap unit is one adapted to provide a downward flow of fluid debouching therefrom, for example, the quick serve tap unit produced by Waddington & Duval Limited. The container may be blow moulded in polyethylene or any other suitable plastics material.

In operation, the above mentioned container is filled with for example, a liquid through the neck and the container is then closed by screwing the cap unit, with the tap in the "off" position, onto the neck such that the direction of flow of liquid emerging from the tap, when said tap is moved to the "on" position, will be vertically downwards. The presence of the inclined base of the container makes it necessary for the container to be placed with said base on a slightly inclined surface of predetermined slope of the container is to be retained in its normal dispensing attitude. When supported on such an inclined surface, for example a wedge placed on a horizontal surface liquid may be dispensed as desired from the container via the tap. Usually the container will be located near an edge of a surface disposed in spaced relationship to a floor of the building so that the tap unit will extend beyond the edge of said surface to enable bottles or other containers to be placed beneath said tap and to be filled with liquid passing through said tap from the container. Thus, when the liquid level in the container falls below the level of the outlet opening, the proportion of liquid retained in the container is less than would be retained if the base wall was substantially parallel to the top wall.

A case adapted to house the above described container is formed of a blank (see Figure 2) of, for example, corrugated fibre-board or cardboard, which blank is adapted to be erected so as to provide a substantially rectangular box-like case having a cavity to accommodate said container.

The case, when erected from the blank and disposed in the dispensing attitude shown in Figures 3 and 4, has a pair of vertically spaced side walls 13, 14, which side walls are interconnected at an upper pair of ends thereof by a horizontally disposed upper wall 5 and are interconnected at a lower pair of ends thereof by a horizontally disposed lower wall or base 6. Since, in the blank the upper wall 5 is hingedly connected to both of the side walls 13 and 14 and the base 6 is hingedly connected to the side wall 14 it is merely necessary to provide means for connecting side wall 13 to base 6 in order to join the walls 5, 6, 13, 14 of the case together. Suitably side wall 13 and base 6 may be connected by means of a tape extending along the edge formed by the junction

of said walls from a forward to a rearward end of the case.

The rear wall of the case is formed from a pair of rectangular flaps 7, 8 which in the blank extend rearwardly of the base 6 and the upper wall 5 respectively. A second pair of flaps 7a, 8, which flaps are intended to form partial inner linings to the side walls 14 and 13 respectively are hingedly connected one to each of the side edges of flap 8. These flaps 7a and 8a are each of trapezoidal shape having a forward and rearward edge disposed in spaced parallel relationship to the forward edge of the adjacent side wall and having the side edge thereof remote from flap 8 diverging outwardly with respect to flap 8, from the rearward to the forward edge of said flaps 7a, 8a. The rear wall is assembled from the flaps 7 and 8, before connecting side wall 13 to base 6, by moving flaps 7a, 8 and 8a to a position where all of said three flaps are perpendicular to upper wall 5, flaps 8 and 8a being contained in a single plane and flap 7a extending perpendicularly inwardly with respect to the case to be formed from the blank from said plane. Flap 7 is then moved, with accompanying movement of base 6 and side wall 14 to a position where said flap 7 covers the inner surface, with respect to the case to be formed from said blank, of flap 8. Finally, the flap 8a is moved to a position where it extends perpendicularly inwardly, with respect to the case to be formed from the blank from the plane containing flap 8 and the wall 13 is moved through 90° to complete the box-like structure of the case. Thus, the rear wall is of double thickness being formed of an inner wall, i.e. flap 7, and an outer wall, i.e. flap 8 which walls are held together by the above described manner of construction of the case from the blank.

The upper wall 5 and the base 6 each have an outer closure flap 3 and 4 respectively hingedly connected thereto at the forward ends thereof. Each of these closure flaps 3, 4 are formed with a hingedly connected extension 9, 10, which extension 9, 10 has a spaced pair of open ended slots 11 extending perpendicularly inwardly from the end thereof remote from the wall to which the relevant outer closure flap is attached.

The side walls 13, 14 of the case are each provided with an inner flap 16 hinged thereto and adapted to be bent along the fold lines 17, 18 and 21 so that the portion 19 formed between fold lines 17 and 21 will be disposed in spaced parallel relationship to the portion 20 formed between fold line 18 and the adjacent side wall 13, 14 (as shown to the left of Figure 4), the innermost face of the portion 19 occupying a position in which it is substantially in engagement with the forward face of the plastics container 1 and the portion 30 joining portions

19 and 20 being disposed in spaced parallel relationship to the side wall from which the flap extends. The inner flaps 16 are each further bent at right angles along the fold line 21 so that the portion 22 formed between fold lines 21 and the edge of each flap occupies a position within the case such that it is tightly wedged between the side of the case and the side of the container 1 respectively as indicated at dotted lines in Figure 4. The portions 20 of each of the flaps 16 are each provided with an elongate slot 23 which extends into portion 30, with which slots the extensions 9, 10 of the outer closure flaps 3, 4 are adapted to interlock to effect closure of the case. An elongate slot 29 is also provided in each of the portions 30 for the purpose specified below.

In order to locate the container 1 within the case so that it is prevented from movement therein, a member 25 is provided. The member 25 is formed from a sheet of material, for example, fibreboard or cardboard, and has a central aperture 26 which is adapted to be located over the neck 45 of the plastics container and engage behind a series of peripheral projections 27 on the base of a cap unit incorporating a dispensing tap 2 when said unit is screwed onto the neck 45. The member 25 is also provided with opposed tongues 23 which are adapted to be inserted into the slots 29 of the inner flaps 16.

The outer closure flap 4 is provided with a series of perforations 31 and the base 6, to which the flap 4 is hinged, is also formed with a series of perforations 32, the arrangement being such that the perforations 31 and 32 together define a generally rectangular area with approximately three-quarters of the perforations defining the area being formed in the flap 4 and the remaining perforations being formed in the base 6. The perforations 31 and 32 are disposed at a position immediately in front of the position occupied by the dispensing tap 2 attached to the neck 45 of the container 1 enclosed by the case and thus enable a portion of the base 6 and the associated flap 4 to be severed by the user so as to form an aperture in the case thereby exposing the dispensing tap 2 and permitting access thereto. To facilitate such severance the lower horizontal line of perforations 32, i.e. in the base 6, communicates with an arcuate scored portion 33 which can be depressed and engaged by a finger of the user to afford a grip on the portion that is to be removed.

In order that the container 1 may be retained in the case in a dispensing position or attitude, i.e. with the axis of the neck 45 of the container substantially horizontal, a wedge shaped insert 50 (see Figure 6) formed, for example, of fibreboard, cardboard or other lightweight sheet material, is provided. This member 50 is formed of a first horizon-

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5 tally disposed portion 51, a second portion 52 hinged to one end of portion 51 and extending vertically upwardly therefrom, and a third support portion 53 which is hinged to portion 52 and is inclined downwardly therefrom to terminate forward of portion 51. The width of portions 51, 52 and 53 are the same and are such as to enable the wedge 50 to be tightly fitted within the case with portion 51 adjacent the forward inner surface of the base 6 and portion 52 adjacent the inner wall, i.e. flap 7, of the rear wall.

10 In use, the case contains the container 1 located therein in the manner described above with the end flaps closed and the perforated portion in place so as to protect the container 1. When it is desired to discharge liquid or other free flowing material from the container 1, the case is placed with its base 6 on a substantially horizontal surface, which surface is in spaced relationship to a floor of the building, towards an edge of said surface. In this position the container is supported within the case with the axis of the neck thereof substantially horizontal i.e. in the normal dispensing position, by abutment of the inclined face of the container with the inclined portion 53 of wedge 50. The perforated portion is removed from the case to expose the dispensing tap 2 and thus to allow material to be dispensed from the container.

15 An advantage of the pack comprising the above described type container and case combination is that a number of such packs may be stored one on top of another whilst providing access to the lowermost container and permitting the liquid contained in said container to be dispensed therefrom when the pack is in its dispensing attitude.

40 WHAT WE CLAIM IS:—

45 1. A container having an outlet provided in a forward end wall thereof and a base wall adjacent said outlet, which base wall, when the container is disposed in its normal dispensing attitude, (i.e. with the outlet orifice

in the forward end wall contained in a vertical plane), is inclined from its rearward extremity downwardly towards its forward extremity adjacent the forward end wall.

2. A container as claimed in claim 1 wherein the forward end wall is planar and is contained in a vertical plane when the container is in its normal dispensing position.

3. A container as claimed in claim 2 which is of approximately cuboidal shape being formed of a pair of side walls, the forward end wall through which the outlet extends, a rear end wall, an upper wall, and the base wall, said forward, rear, upper and base walls extending substantially perpendicularly between said side walls and said base wall sloping inwardly with respect to the container from the junction with the forward end wall rearwardly to the junction with the rearward end wall.

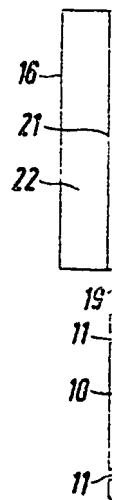
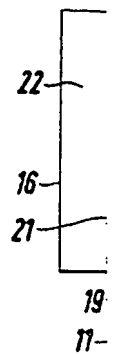
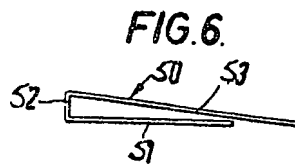
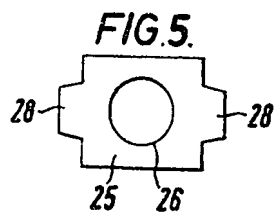
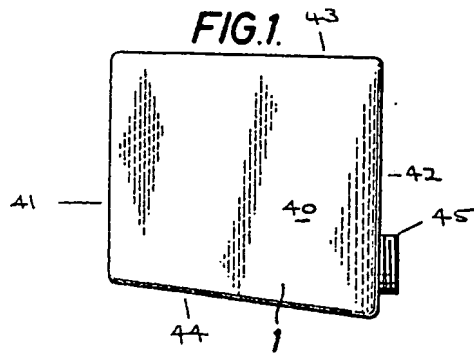
4. A container as claimed in any one of the preceding claims wherein the outlet comprises a neck extending forwardly of the forward end wall.

5. A container as claimed in claim 4 wherein the outlet incorporates or is adapted to co-operate with a control for controlling the flow of material from the container via said neck.

6. A container as claimed in claim 5 wherein the neck is externally threaded to receive a co-operating internally threaded cap unit incorporating a tap for controlling the rate at which the contents of the container may be dispensed.

7. A container as claimed in claim 1 substantially as hereinbefore described with reference to and as illustrated in Figure 1 of the accompanying drawings.

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COMPLETE SPECIFICATION

2 SHEETS

This drawing is a reproduction of
the Original on a reduced scale

Sheet 1

FIG. 2.

